

IN THE DRAWINGS

The attached sheets of drawings include changes to Fig. 1A, 1B, and 2. These sheets, which include Fig. 1A, 1B, and 2, replace the original sheet including Fig. 1A, 1B, and 2.

Attachment: Replacement Sheet

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 9-16 are presently active.

In the Office Action, the declaration was objected to. Figures 1A, 1B, and 2 were objected to. Claims 9 and 14-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bay ("Capillary detectors in LHC-B") in view of Karrellas (U.S. Pat. No. 5,864,146). Claims 10 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bay and Karrellas in view of Franks (U.S. Pat. No. 4,359,641). Claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Bay and Karrellas in view of Wojcik (U.S. Pat. No. 5,859,946). Claims 13 and 16 were objected to for being dependent from a rejected base claim but would be allowable if rewritten in independent form to include the limitations of the base claim and any intervening claims.

Firstly, Applicants acknowledge with appreciation the indication of allowable subject matter in Claims 13 and 16.

Secondly, regarding the objection to the declaration, the address information on the filed declaration was reproduced in legible form on the Application Data Sheet filed with the application. Under M.P.E.P. § 601.05, bibliographic information on the Application Data Sheet is the information captured by the Patent Office. Thus, the objection to the declaration should be withdrawn in view of the filed Application Data Sheet.¹

Thirdly, the drawings have been amended as suggested in the Office Action. Thus, the objection to the drawings has been overcome.

Finally, regarding the rejection on the merits, Claim 9 defines:

A two-dimensional ionising particle detector comprising:

¹ The Office Action acknowledges on page 2 that the mailing address information can be provided in an application data sheet.

a matrix of detecting fibers, each detecting fiber forming a pixel of the detector and including a scintillator to emit scintillation light,
wherein each detecting fiber comprises a glass capillary filled with a liquid scintillator for which ***a chemical composition is chosen such that an average free path of primary scintillation photons is negligible compared with a diameter of the capillary.*** [emphasis added]

Applicant respectfully traverses the Office Action's position concerning whether Bay discloses a chemical composition chosen such that the average free path of primary scintillation photons is negligible compared with the diameter of the capillary.

Applicants submit that one of ordinary skill in the art at the time of the present invention would have normally assumed that "the average free path of primary scintillation photons" and "the spatial resolution of the liquid scintillator" are the same. However, in the patent application as filed, the spatial resolution of the liquid scintillator is, for example, about 7 μm (see page 6, lines, 3-8) and the capillary diameter is, for example, between 500 μm and 20 μm (see page 5, lines 3-5). The ratio between the spatial resolution and the capillary diameter is therefore between 0.33 and 0.017. These values are examples which illustrate in the present invention an average free path of primary scintillation photons that is negligible compared with the diameter of the capillary.

Applicants submit that this feature of the present invention (i.e., an average free path of primary scintillation photons being negligible compared with the diameter of the capillary) is not found in the applied references.

Concerning Bay, Bay discloses that "the intrinsic space resolution of a capillary detector essentially depends on the capillary diameter, the capillary array uniformity, and the performance of the read-out system." See page 4, paragraph 3, point 2. While Bay discloses (at the bottom of page 4 to page 5) a number of green light emitting dyes, there is no disclosure in Bay of a relationship between the dye chemical composition and the average free path of primary scintillation. Thus, Applicants submit that Bay does not disclose that a

chemical composition is chosen such that the average free path of primary scintillation photons is negligible compared with the diameter of the capillary, as claimed.

Concerning Karellas, Karellas was applied in the Office Action for their teaching of a fiber bundle coupled to a CCD array in which each CCD has dimensions of 20 μm by 20 μm . While a number of scintillator materials are disclosed in Karellas (see col. 10, lines 12-16, col. 18, line 52, to col. 19, line 4, col. 22, lines 62-63, and col. 31, lines 47-50), there is no disclosure in Karellas for choosing the chemical composition of the phosphors based on an average free path of primary scintillation photons being negligible to a diameter of the capillary. Accordingly, the deficiencies in Bay are not overcome by Karellas.

M.P.E.P. § 2143 requires for a *prima facie* case of obviousness that the prior art reference (or references when combined) must teach or suggest *all* the claim limitations.
[emphasis added]

Therefore, Applicants submit that the present invention cannot be deduced from a combination of Bay and Karellas.

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Consequently, in view of the present amendment and in light of the above discussions, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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